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AUTHOR	Cotton, Kathleen
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ABSTRACT

Sixteen documents (13 studies and 3 large-scale reviews) were reviewed to assess the effectiveness of interdisciplinary team teaching in enhancing student achievement. Nine documents focused on or included the intermediate grades, and seven dealt with students at other age/grade levels, chiefly junior high. With one exception, all documents reviewed were concerned with achievement in one or more curricular areas, or with both achievement and affective outcomes. The remaining study examined student satisfaction and was included because affective outcomes are also reported. Studies and reviews examined involved experimental and correlational comparisons between a team teaching approach (usually across academic disciplines) and a "traditional" approach--the one-teacher, self-contained classroom. Findings are discussed in the areas of achievement and affective outcomes, and implementation guidelines for interdisciplinary team teaching are suggested. References are included. (JD)

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EFFECTS OF INTERDISCIPLINARY TEAM TEACHING

Research Synthesis

Prepared for:
Bolton Middle School
West Linn School District
West Linn, Oregon
Kenton R. Hill, Principal

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by
Kathleen Cotton

February 1982

Northwest Regional Educational Laboratory
300 S.W. Sixth Avenue
Portland, Oregon 97204
Telephone (503) 248-6800

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Introduction

Team teaching and the interdisciplinary philosophy are closely related and are probably the most basic and unique aspects of the middle school attempt to broaden and integrate subject matter at the intermediate level (Coppock & Hale, 1977). Indeed, according to Lounsbury (1981), "to many people, interdisciplinary teaming and middle schools are synonymous."

The interdisciplinary team teaching concept involves teachers from two or more academic disciplines in the planning, preparation, presentation, and evaluation of lessons to accomplish common learning objectives (Garner, 1976). Basic to this practice is an attempt to put together teachers with varying abilities in content knowledge and skills in order to capitalize on individual teaching strengths and to minimize weaknesses (Davis, 1975). It is also intended to serve as an aid in grouping students and as a strategy for making maximally good use of planning and instructional time (Brown, 1981).

While interdisciplinary teaming is common practice at the middle school level, its viability as an instructional arrangement is generally assumed rather than investigated. According to Armstrong (1977), the five major strengths claimed for interdisciplinary teaming include:

- Capitalizing on the individual strengths and weaknesses of teachers
- Engendering creativity, because of close working relationships among teachers
- Facilitating individualized instruction
- Providing better sequencing and pacing, because teachers can check their perceptions with others
- Building program continuity, as the team abides even when individual teachers come and go.

Armstrong goes on to say that "underlying all of these 'strengths' is the often unstated, but fundamental, assumption that team teaching results in improved learner achievement," and that "without evidence that team teaching enhances academic performance, the listed 'strengths' of team teaching will not stand."

While it may be that the interdisciplinary teaming approach fosters desirable educational attainments other than student achievement gains, it is certainly important to review the research on the achievement outcomes associated with this practice. Familiarity with the findings emerging from research in this area enables school personnel to make decisions based on what is known, rather than what is assumed, about the efficacy of this instructional arrangement.

Research Findings

The major focus of this paper, therefore, is the effectiveness of interdisciplinary teaming in enhancing student achievement, as determined by research studies and reviews concerning this issue. Sixteen documents--13 studies and 3 large-scale reviews--were examined. Nine of these focused on or included the intermediate grades, and seven had to do with students at other age/grade levels, chiefly junior high. With one exception, all documents reviewed were concerned with achievement in one or more curricular areas, or with both achievement and affective outcomes. The remaining study had to do with student satisfaction, and was included because affective outcomes, too, are reported in the present paper. Studies and reviews examined involved experimental or

correlational comparisons between a team teaching approach (usually across academic disciplines) and a "traditional" approach--the one-teacher, self-contained classroom.[1]

Achievement. R.W. Scholz's 1978 review was the product of an examination of team teaching research conducted in the United States and in Europe. Of the 65 studies reviewed by Scholz which were carried out in the U.S., 36 found no significant differences between the achievement of team-taught and traditionally taught students; 19 found differences favoring team teaching; and 11 found differences favoring the traditional approach.[2]

The present reviewer's examination produced similarly inconclusive results: Excluding the Scholz review just described, the remaining 15 items included 11 which revealed no achievement differences in all or most areas studied; two which favored team teaching in all or most areas; none that favored traditional teaching; and two that were longitudinal studies, which, because their findings changed from year to year, must be judged inconclusive. Looking only at the nine items which included, or were confined to, the intermediate grades (and again excluding the Scholz review) eight found no significant differences between approaches and one favored team teaching. Of the eight which found no significant differences in most areas, one favored traditional instruction for reading, and the other favored team teaching for math and science.

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[1] The chart on pages 10 and 11 displays the items reviewed, the populations with which they were concerned, the results obtained, and other pertinent data.

[2] The Scholz review included a number of unpublished doctoral dissertations and other largely unavailable materials which were not examined for the present report.

It would appear that if a decision is made to adopt or to maintain an interdisciplinary team teaching approach at the middle school level (or, for that matter, at any other level), that decision should be made on grounds other than hoped-for achievement increases.

Affective Outcomes. While educators and community members generally agree that academic achievement is the most important measure of school effectiveness, they also agree that positive student attitudes, self-esteem and other affective outcomes are important products of schooling. What does the research say about the effects of interdisciplinary teaming on these affective outcomes?

Eight of the documents reviewed reported on the relative effects of team teaching and traditional teaching on one or more affective areas. These areas included self-concept, happiness with school, attitude toward teachers, interest in school subject matter, sense of personal freedom, sense of influence on the school environment and self-reliance. Here a different picture emerges from that revealed by the inquiry into achievement differences. While the results of two studies revealed more positive school attitudes on the part of traditionally taught elementary students, six reports favored interdisciplinary teaming, either slightly or significantly, with regard to affective outcomes. Five of the reports favoring interdisciplinary team teaching included, or were restricted to, the intermediate grades; and the one study showing opposite findings was concerned with middle school students. Of the five reports in which affective outcomes for intermediate students were examined, three of these (including the large-scale Scholz review) favored team teaching, and two favored traditional teaching.

Conclusions. As concerns student achievement, the research on the effectiveness of interdisciplinary team teaching, as compared with traditional one-teacher, one-classroom arrangements, generally indicates that these two formats are equally effective in enhancing student achievement, both at the intermediate level and for students generally. Quite a few studies can be found which favor one or the other of these approaches, but most studies do not reveal significant differences between their effects.

With regard to affective outcomes such as self-concept and school attitudes, interdisciplinary teaming is at least slightly favored by the majority of studies reviewed and significantly favored by some. In most cases, the same studies which found few or no achievement differences did find affective differences favoring interdisciplinary teaming.

It seems reasonable, therefore, to conclude that, since the interdisciplinary teaming arrangement is just as effective as traditional methods in promoting student achievement, and since the arrangement has been shown to confer benefits on the affective development of students, it is a viable way to organize for providing instruction to middle school children. Georgiades (1968) states that, "Greatly improved student performance as measured by standardized achievement tests is not the most important objective of team teaching. Teaching basic methods of inquiry and cultivating a desire to learn are much more significant." And DeVirgilio (1972) points out that interdisciplinary teaming is an ideal organizational format for use with "preadolescents [who are] growing organisms in need of a curriculum and process that is dynamic, relevant, and subject to change . . ."

The value placed by the school or district on promoting the kinds of affective outcomes shown to be associated with interdisciplinary teaming will influence the decision as to whether to adopt or maintain this arrangement. Other factors, such as available resources, staff and administrator preferences for scheduling and for delivering instruction, available time and type of facility, may have even more bearing on decisions reached regarding this issue.

Implementation

Since the major intent of this paper has been to review the research on the effects of interdisciplinary team teaching, the following sections provide only the briefest overview of the stages involved in implementing an interdisciplinary teaming arrangement. Readers are referred to the References section for additional resources.

The Decision to Utilize Interdisciplinary Teams. Many good resources exist which can help schools and districts to decide whether the utilization of interdisciplinary teaching is desirable and workable for them. These materials generally emphasize the importance of carefully weighing the advantages and disadvantages of this arrangement before choosing to make an organizational change of this magnitude.

Garner (1976) writes that administrators and teachers usually identify three reasons to describe the rationale for adopting interdisciplinary team teaching. These include:

- To improve the utilization of equipment, resources, and facilities
- To more effectively utilize the skills and talents of the teaching staff
- To expedite more effective instruction.

Garner then presents a list of questions which can help schools decide whether to adopt an interdisciplinary teaming approach:

1. Do we have specific reasons for implementing interdisciplinary team teaching?
2. Does our schedule provide time for adequate team planning?
3. Will team members adapt better to a hierarchical or rotating team leader approach?
4. Are leadership attributes evident in the team leaders?
5. Do we have adequate facilities to effectively house large-group, small-group, and independent instruction?
6. Are proper instructional materials available?
7. Are the resources and time available for inservice preparation of team teachers?
8. Do we have an adequate testing program to provide continuous evaluative feedback on pupil progress?
9. Is our grading system properly correlated with the instructional objectives of team teaching?
10. Will the grouping patterns be flexible to provide for transferring students between groups?
11. What instruments do we have to identify and capitalize on the strengths of each team member?

Drawing on the experience of schools which have implemented interdisciplinary team teaching, Garner cites, by way of forewarning, some common problems associated with efforts which have not been successful:

1. Faculty members have not internalized the philosophy upon which the concept is based.
2. Team members are unprepared to develop an interdisciplinary instructional unit.
3. There is an inadequate provision of resources and space available.
4. Team members are unable to schedule student activities to accomplish the learning objectives.
5. The incompatibility of some team members strains the important human relations factors.

Establishing Objectives and Conducting Initial Planning. If it has been determined that interdisciplinary teaming is desirable and that the basic requirements for it are available, it will then be necessary to establish the objectives of instruction within this arrangement for the individual school. Davis (1975) offers a list of activities for teachers to follow:

1. Teachers must identify the phases of the curriculum that can be best developed either in a horizontal or in a vertical progression.

2. Teachers must distinguish between phases of the curriculum that can be observed or tested objectively and those that are more subjective and must be developed as conceptual schemes.

3. Teachers must determine which objectives within a set discipline of the curriculum lend themselves to the development of a theme and then which themes have natural relationships between or among disciplines.

4. Teachers must organize their objectives into units or work modules that represent separate and distinct learnings.

5. Each objective must be further examined to determine whether it would be most effectively and efficiently achieved by students in large instructional groups, in small instructional groups or in individualized work activities.

6. Teachers must become familiar with the students with whom they expect to work.

Planning and Scheduling. De Virgilio (1972) offers a set of guidelines for use by interdisciplinary teaching teams as they plan, carry out and evaluate instruction. This extensive list is organized around the team's need to be familiar with 1) characteristics of the preadolescent/early adolescent child and the particular children instructed by the team; 2) the best instructional strategies to use with these children; and 3) proven practices in the management of interdisciplinary team efforts.

Coppock and Hale (1977) point out that the different options for instructional program scheduling within an interdisciplinary teaming arrangement are virtually endless, and state that "most writers recognize that a schedule must grow out of an individual school's needs." Nevertheless, some excellent guidance in this area is provided in a 1981 article by Lounsbury and in a 1976 report by Nolan and Roper (see the References).

Finally, readers are referred to the many journal articles and reports which describe the experience of districts and individual schools in implementing interdisciplinary team teaching. These informal case study reports can provide much valuable information to those who are planning to adopt or make improvements within an interdisciplinary teaming at the middle school level.

RESEARCH FINDINGS ON THE EFFECTS OF TEAM TEACHING
ON ACHIEVEMENT AND AFFECTIVE OUTCOMES

Study/Review	Subjects	Outcome Measures	Favored Team Teaching	Favored Traditional Teaching	No Difference
Armstrong, 1977* (Review)	Elementary (secondary findings not reported here)	Achievement			x (most studies)
Begle, et al., (R)	Elementary	Achievement			x (most studies)
		Self-concept	x		
Boyles, et al., 1969 (study)	Grades 1 & 7	Achievement	Inconclusive - results differed from year to year		
		Self-concept	x		
Burningham, 1968 (S)	Grade 4	Math/Science	x		
		Other academic areas			x
Cooper & Sterns, 1973 (S)	Grades 4 & 6	Reading achievement			x
		Mental maturity			x
Gamsky, 1970 (S)	Grade 9	English			x
		World history			x
		Attitude toward teachers/interest in subject/ sense of personal freedom/self-reliance	x		

*See the References section for full citations.

RESEARCH FINDINGS . . .
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Study/Review	Subjects	Outcome Measures	Favored Team Teaching	Favored Traditional Teaching	No Difference
Georgiades & Bjelke, 1977 (S)	Grade 9	Achievement	x		
Jackson, 1964 (S)	Grades 5 & 6	Achievement			x
Lambert, et al., 1965 (S)	Primary	Achievement	Inconclusive - results different in different years		
Odetola, et al., 1972 (S)	Intermediate/ Jr. High	Happiness/ Power-Powerlessness		x x	
Rhodes, 1971 (S)	Grades K-6	Reading gain Other academic areas Attitude		x x	 x
Roper, 1977 (S)	Deaf students	Achievement Attitudes	x x		
Schlaadt, 1977 (S)	Grade 10	Health knowledge			x
Scholz, 1978 (R)	Elementary/ Secondary	Achievement Attitudes	x(19) x(slightly)	x(11)	x(36)
Sterns, 1969 (S)	Grades 4 & 6	Reading gain Other academic areas		x 	 x
Zweibelson, et al., 1965	Grade 9	Social studies Attitudes	x		x

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